



# MODIFICATION INSTRUCTIONS

for the

## **KODAK MINILOADER 2 PLUS, MODELS STAND-ALONE, M35-M & 480RA**

Service Codes 3236, 3239 & 3240

### MODIFICATION No. M06

#### Type 2

#### PURPOSE:

To replace six glass FUSES with auto-resetting devices. This will eliminate service calls that are made purely to replace blown fuses.

**IMPORTANT:** Only qualified service personnel should install this modification!

<b>SERIAL NUMBERS:</b>	Model Stand-Alone	(3236)	3001 - 3014
	Model M35-M	(3239)	2603 - 2654
	Model 480RA	(3240)	4001 - 4009

**INSTALLATION TIME:** Approximately 30 minutes.

**SPECIAL TOOLS:** None

**PARTS REQUIREMENT:** Modification kit 30091106  
See parts list on page 2.

**PARTS AVAILABILITY:** August 1993

## **PARTS LIST**

<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
30091106	MODIFICATION KIT	1
THE KIT CONTAINS:		
30025886	MULTIFUSE R250	3
30025887	MULTIFUSE R135	1
30025888	MULTIFUSE R050	2
MB3239-M06	MODIFICATION INSTRUCTIONS	1

### **CAUTION**



This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

### **PLEASE NOTE**

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## INFORMATION ABOUT THE MULTIFUSES.

BOURNS MULTIFUSE protectors act like a FUSE under over-current conditions. Unlike a FUSE they are resettable.

A MULTIFUSE is a solid state device with a positive temperature coefficient. The MULTIFUSE is used in series with the power source and the circuit or component that have to be protected against damage or fire.

Under normal operating conditions the resistance of the MULTIFUSE is comparable to that of a fuse link, between milliohms and a few ohms, depending on the specified current carrying capacity.

The MULTIFUSE undergoes an abrupt change in resistance when an over-current heats it up to its "trip" temperature, about 125°C. This increase limits the current from the power source and the circuit to be protected to a value which normally does not cause any harm. Switch-off times are similar to those of slow-blow fuse-links. The remaining current keeps the MULTIFUSE above its trip temperature and latches it in the protective high resistance state.

The MULTIFUSE will reset, which means it will return to its low resistance state, if it is allowed to cool to below its trip temperature. This can be achieved if power is switched off, or if the current is substantially reduced. Once the MULTIFUSE is reset, and the fault condition has been cleared, the normal circuit operation resumes.

A MULTIFUSE always fails safe, which means that it will go towards high resistance.

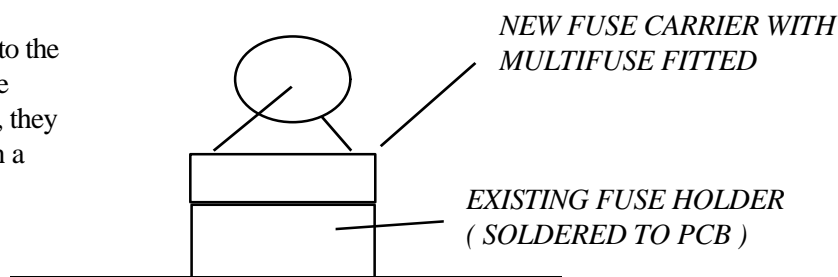
The TABLE below shows the normal resistance at room temperature of each of the three devices used, the normal holding current (MULTIFUSE will not trip) and the typical trip current. The actual trip current will depend on ambient conditions.

The typical reset time is less than 20 seconds at 20°C, and the expected life is about 200 reset cycles.

CAUTION :- The maximum surface temperature in the tripped state is 125°C.

DEVICE	HOLDING CURRENT	RESISTANCE AT ROOM TEMPERATURE	TRIP CURRENT
R050	500 m Amp	0.5 - 1.2 OMH	750 m AMP
R135	1.35 AMP	0.06 - 0.17 OHM	2.3 AMP
R250	2.5 AMP	0.02 - 0.08 OHM	4.25 AMP

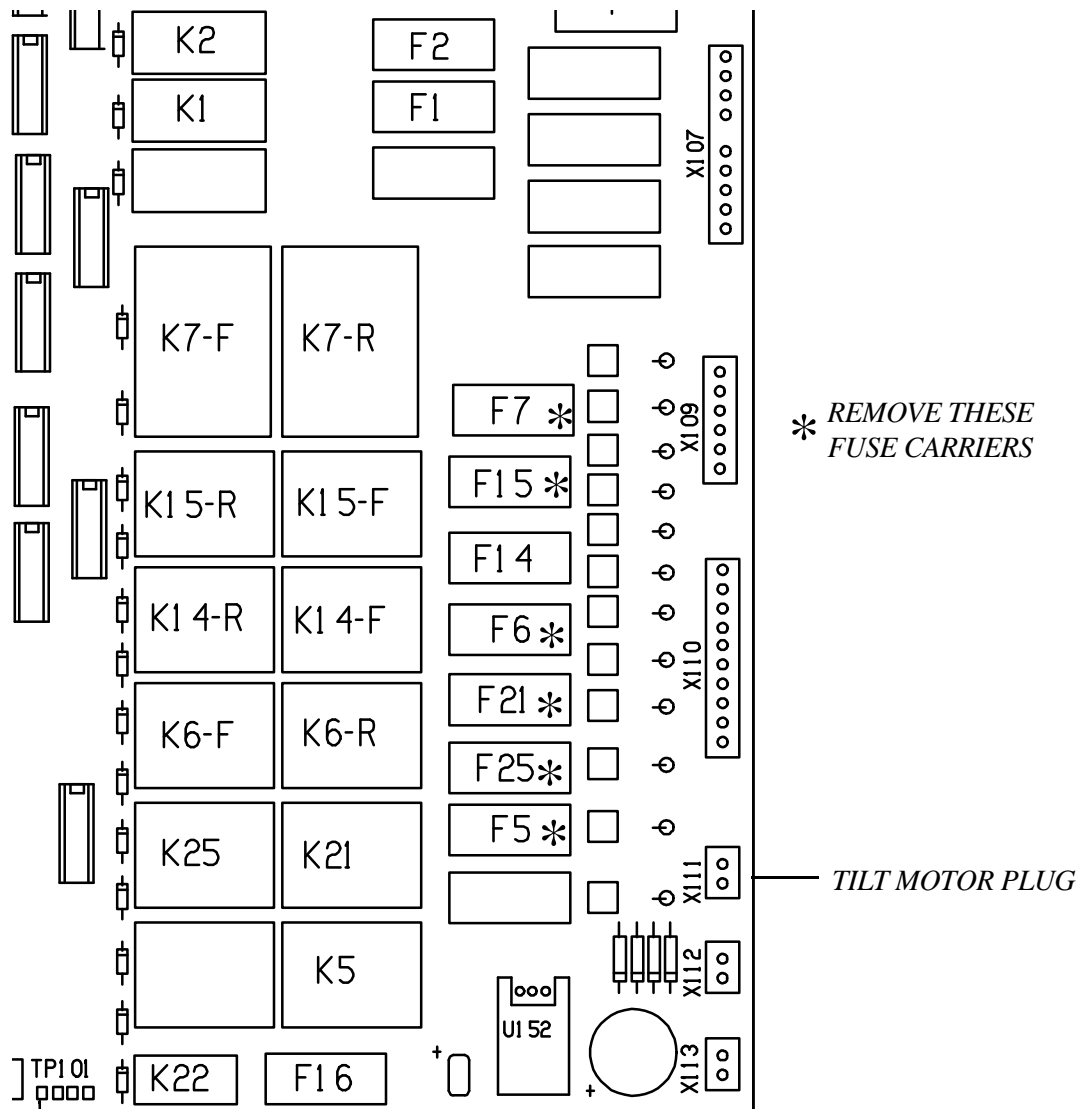
These devices would normally be soldered onto the PCB, but to facilitate the fitting to existing PCB's, they are supplied mounted on a FUSE CARRIER.



## **MODIFICATION INSTRUCTIONS**

1. Turn off the power to the MINILOADER.
2. Remove the TOP COVER and the FRONT PANEL. Make sure you disconnect all CABLES as you remove the FRONT PANEL.
3. Pull the PCB 301 forwards and remove the SCREWS which hold the clear plastic PROTECTION COVER in place. Disconnect the POTENTIOMETER for the TILT MOTOR ( PLUG X111) and remove the COVER.
4. Taking ESD precautions, remove the FUSE CARRIERS for FUSES F7, F15, F6, F21, F25 and F5. See FIGURE 1.

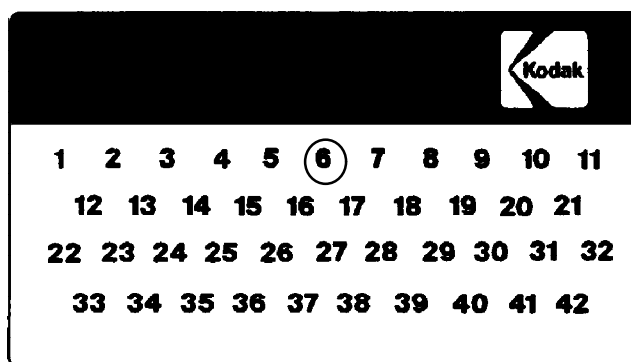
FIGURE 1



5. Using the TABLE below, fit the new MULTIFUSES into the existing FUSEHOLDERS.

FUSE POSITION	PURPOSE	MULTIFUSE	PART NUMBER
F7	CAM MOTOR	R250	30025886
F15	MAGAZINE CARRIAGE MOTOR	R250	30025886
F6	CASSETTE CONVEYOR MOTOR	R250	30025886
F21	CASSETTE GUIDE MOTOR	R135	30025887
F25	8 x 10 ENSTOP MOTOR	R050	30025888
F5	TILT MOTOR	R050	30025888

6. Plug the TILT MOTOR POTENTIOMETER back into PLUG X111, and refit the PROTECTION COVER on PCB 301.
7. Push the PCB 301 ASSY back into position, and refit the FRONT PANEL. Make sure all the PLUGS are refitted as you replace the PANEL.
8. Circle M06 on the MODIFICATION LABEL.



9. Refit the TOP COVER and test the MINILOADER. Make sure you test all sizes.
10. Inform the operator that in the event of an ERROR CODE being displayed that cannot be cleared by the RESET BUTTON, to switch the MINILOADER off for 1 minute and they try again to reset the machine.



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